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The Effects of Oral Pain Medication Being Administered in Phase I as Compared to Oral Pain Medications Administered in Phase II

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The Effects of Oral Pain Medication Being Administered in Phase I as Compared to Oral
Pain Medications Administered in Phase II

by

Dana Jones

A thesis submitted to the faculty of
Gardner-Webb University School of Nursing
in partial fulfillment of the requirements for the
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Submitted by:

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Abstract

Healthcare and the provision of care are ever-changing as governing bodies over-see and regulate the way institutions provide care for patients. Pain assessment, reassessment, and pain management are a focus nationally and healthcare providers are held accountable for how pain is managed for patients. One piece to this broad topic is the use of oral pain medications, more specifically in the ambulatory surgical patient. The purpose of this project was to compare the length of stay, reported pain scores, and total amount of IV medications administered between patients who receive the first dose of oral pain medications in Phase I recovery and those who received the first dose of oral pain medication in Phase II recovery. Effective pain management can have numerous benefits for the patient, decreasing the amount of medications used and their length of stay in the hospital may be of two those benefits.

Keywords: early pain medication, length of stay, oral pain medication

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CHAPTER I

Introduction

The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication is administered in Phase I and when oral pain medication is administered in Phase II. Providing more effective pain management for patients can improve their overall surgical experience. Pain or the perception of pain can alter the healing process and impact the emotional state of the patient, and influence the perception of the surgical experience (Tocher, Rodgers, Smith, Watt, & Dickson, 2012). Other benefits to more effective pain management include reduction in length of stay which will positively impact productivity and budgeting for the organization. Overall, effective pain management is not only patient-centered, but promotes good patient outcomes (Sethares, Chin, & Costa, 2013).

Problem Statement

For the patient undergoing a surgical procedure the management of pain can be challenging (Sethares et al., 2013). Pain must be controlled to a level of tolerance, while moving toward the goal of day of surgery discharge. In most instances, nurses are provided autonomy to medicate for pain that is based on their assessment and nursing judgment within the limits of physician orders. This then allows for various practices in control of pain. Dependent on the practices and preferences of the nurse, a patient may receive only intravenous pain medications in the Phase I (immediate post-op) recovery while another patient with a different nurse may receive both intravenous and oral pain medications. This delay of oral medication may affect the patient's dosage of IV

pain medications, their reported level of pain, and ultimately their length of stay in the outpatient surgical unit. Argoff (2013) suggested that mismanaged pain contributes to increased length of stay and other negative outcomes.

A plan for discharge begins on admission to the healthcare facility with the use of Case Managers, Multi-disciplinary rounds, and needs assessments. Planning and implementing these needs earlier during admission aid in reduced length of stay, reduced waste, and improved patient outcomes. Similar benefits could be realized for the outpatient surgical patient if similar processes were used. Pain management for surgical patients is an important role for the peri-anesthesia nurse with the goal of patient safety and reduction of pain in the forefront (Tocher et al., 2012). Oral pain medication lasts longer in the body than intravenous medications and when used early in Phase I recovery could decrease the amount of IV medications administered, the patient's reported level of post-operative pain, reducing their length of stay.

Justification of Research

The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication is administered in Phase I and when oral pain medication is administered in Phase II. Providing more effective pain management for patients can improve their overall surgical experience (Tocher et al., 2012). Pain or the perception of pain can alter the healing process and impact the emotional state of the patient, and influence the perception of the surgical experience (Sethares et al., 2013). Overall, effective pain management is not only patient-centered, but promotes good patient outcomes (Tocher et al., 2012).

Older, Carr, and Layzell (2010), states that approximately 60-70% of all surgical procedures performed are performed as outpatient procedures, and there is an increased challenge in managing post-operative pain. Patients who have reduced pain are better prepared to ambulate and participate in rehabilitative activities (Sethares et al., 2013). Reducing pain earlier allows for participation in activities to occur at an earlier stage during the stay, thus reducing the overall length of stay, nursing care required, and supplemental medications. Reducing post-operative pain promotes activity and reduces complications (Sethares et al., 2013).

Pain management can be a challenging obstacle in patient care. Inadequate pain management can result in co-morbidities such as respiratory complication, cardiovascular complications that can result in an increased length of stay, and slow recovery for the post-operative patient (Mancini & Felicetti, 2010). Inadequate pain control can also contribute to atelectasis, pneumonia, and hypoventilation (Nworah, 2012). Currently, regulatory agencies require adequate pain assessment and management because of the documented benefits of effective pain control (Gropelli & Sharer, 2013). The Joint Commission has established that effective assessment and treatment for pain is a patient right and has set expectations for organizations to provide a comprehensive pain assessment and appropriate pain interventions (Nworah, 2012).

Properly assessed pain and adequate pain control is also associated with positive patient outcomes. According to Nworah (2012) effective pain management can provide betterment to patients including: earlier ambulation, reduced length of stay, increased patient satisfaction, and a reduction in healthcare costs. Nworah (2012) further stated that patients with poor pain management yield a higher risk for post-operative complications.

Pain has significant impact on the overall health of patients. By reducing this stimulus (pain) and subsequently improving overall health, motivation and satisfaction patients are subsequently further along in the discharge and recovery process than patients with inadequate pain management (Tocher et al., 2012).

Ineffective pain management has many causes. Because a nurse cannot see or feel the pain being experienced there is risk for the nurse's bias or lack of knowledge can impact the treatment of pain (McNamara, 2012). This risk has been reduced by the assessment and documentation of the patient's reported pain level, however nursing bias can impact how pain is treated. Research, such as that conducted by Sethares et al. (2013) is now uncovering valuable information related to untreated pain and its effect on patients. The identified reasons why pain management is often inadequate are: nurses administering less than prescribed, patients do not tell staff that they have pain, nurses underestimating the patient's experience of pain, delay in the administration of medication, or pain is not monitored (Mitchell, 2004). Early administration of medications can manage pain before the level of intolerance and may yield earlier discharges. Therefore, the use of oral and IV medications together could achieve improved pain management. With the use of oral and intravenous pain medications in the outpatient surgery setting nurses can have a significant impact on patient outcomes.

McNamara (2012) further suggested that healthcare professional's assessment of pain was less than that which was reported by the patient, and that patients are then denied requested pain medications. Reasons for this include: lack of knowledge regarding opioids, lack of knowledge for pain management, assessment, and bias (McNamara, 2012). The inadequate treatment of pain and the risk of complications in the acute post-

operative period remains an issue for patients and healthcare professionals (Argoff, 2013). McNamara (2012) identified that nurse's negative thoughts, inadequate assessment, and in lack of education regarding opioids lead to poor pain management and the withholding of opioids to manage pain.

Purpose

The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication is administered in Phase I and when oral pain medication is administered in Phase II. Pain should be treated proactively, not reactively, and proactively treating pain results in better pain management, reduced complications, and increased activity (Sethares et al., 2013).

Thesis Question

Does oral pain medication given in Phase I recovery differ in effect on the amount of IV medication needed for pain control, the patient's level of pain, and the patient's length of stay compared to patients who receive oral pain medication in Phase II?

Theoretical Framework

Dorothea Orem's Self-Care Deficit Nursing Theory is based on the concept of patients having a desire to care for themselves; however there are times that due to illness or injury, patients are unable to care for themselves and nursing care is required (Alligood & Tomey, 2010). This theory describes the needs of humans, their desire to care for themselves, and identifies the situations in which self-care is dependent on others. Self-Care deficit is the inability to adequately provide self-care, where their ability does not meet the demands of care.

This theory relates to the post-operative patient and their inability to manage their pain in the hospital setting. Patients undergoing anesthesia and surgery are consenting to the relinquishing of self-care and are reliant on the doctor or nurse to provide the care needed.

Pain management is a significant piece of peri-operative care. Additionally, due to having undergone general anesthesia, patients are unable to make decisions and are unable to care for themselves during this time, therefore are completely dependent on nursing and physicians. Orem's Self-Care Theory highlights the responsibility healthcare workers have in providing care when patients cannot provide care for themselves, while at the same time educating patients and guiding them in how to care for themselves following surgery.

Definition of Terms

- Phase I – The nursing unit where patients are cared for immediately after surgery when performed under general anesthesia where a breathing tube is inserted during surgery. Also called PACU, or Post-anesthesia care unit. (London Health Sciences Centre, 2009)
- Phase II – The day surgery discharge area where specific health criteria must be met in order for patients to be accepted in this unit. Patients admitted to this area are awake, require no supplemental oxygen, have controlled pain, bleeding is minimal to none, and they are tolerating clear fluids by mouth. (London Health Sciences Centre, 2009)

- Anesthesia – medications provided with the purpose of decreasing consciousness and inhibiting pain receptors for the purpose of surgical procedures (London Health Sciences Centre, 2009)
- Post-anesthesia – after surgery is complete, anesthesia medications are no longer provided and a patient “wakes up” (London Health Sciences Centre, 2009)
- Pain Scale – Numeric scale 0-10, 0 indicating no pain and 10 indicating the worst pain imaginable

Summary

Research has already supported that effective pain control provides numerous benefits for health and wellness. Ineffective pain management is linked to poor patient outcomes and co-morbidities that could be managed or prevented with proper pain management. This research data can provide evidence to nursing to base their practice of pain management to improve patient care. Patient-centered care and evidence-based practice are imperative in healthcare and this patient-centered research was designed to improve patient outcomes and provide an evidence-base for practice change. Pain management is challenging at best in most cases and equipping nurses with knowledge on how to improve pain management is crucial. In the outpatient setting discharge is often the focus, while pain can be overlooked. The results of this study has provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication is administered in Phase I and when oral pain medication is administered in Phase II.

The results of this research can impact many patients and aid nurses in improving how patients are helped to manage pain. Research has shown that poor pain management can contribute to poor outcomes and looking further into how pain is managed may provide more information as to the benefits of effective pain management for patients undergoing outpatient surgical procedures.

CHAPTER II

Literature Review

Pain is often an unavoidable occurrence after a surgical procedure and can range from mild to severe depending on the procedure and/or the patient's perception of pain. Other factors that affect pain management include nursing care and the medications used to treat pain. The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication is administered in Phase I and when oral pain medication is administered in Phase II.

Review of Literature

In effort to identify supportive evidence for early pain medication administration a literature review was conducted. This literature review aided in identifying research that supports the benefits of effective pain management, and poor outcomes as a result of poor pain management. Cumulative Index to Nursing and Allied Health (CINAHL) and Mosby's Nursing Consult were used for research review using key words that included: pain management, oral pain medication, multimodal pain management, post-operative pain, pain control, pain, and length of stay. No specific research studies were found that addressed early dosing or timing of medications, or to timing of pain medications and length of stay, however the evidence gathered supports the positive effects of effective pain management.

Effects of Poor Pain Management

In a research article by Sethares et al. (2013) pain and pain management strategies were studied in patients following coronary artery bypass graft (CABG) surgery after 12

weeks with the purpose of providing descriptive data. Sethares et al. (2013) identified the under treatment of pain as an issue in this population and conducted weekly phone interviews with patients as a means of data collection. Once pain medications were no longer prescribed, patients used activity modification as a means of pain control thus preventing rehabilitation activities and delaying recovery (Sethares et al., 2013). Additionally, Sethares et al. (2013) stated that patients need a proactive pain management in place of reactive pain management efforts. This study used a convenience sample from a cardiac step-down unit in a community hospital. Sample members had undergone CABG surgery, could speak, had no history of chronic pain, and an absence of major complications. Results gathered indicated the greatest pain initially after surgery with a steady decline during the first six weeks and a rise in pain around week seven (Sethares et al., 2013). Sethares et al. (2013) concluded that CABG patients limit their activity as a means of controlling pain and that patient education on effective pain management would improve activity and reduce complications. The only identified limitation to this study was that frequency of medication was not reported, therefore there was no way to distinguish patients who took one dose from those who had multiple doses.

Research on pain management and its relationship with patient satisfaction in post-surgical patients by Tocher et al. (2012) found that 26% of patients suffer from pain ranging from unceasing to almost all of the time. Using a postal questionnaire, data was gathered from the sample population from three large acute hospitals from those discharged within a two-week period. In an effort to identify a relationship between patient satisfaction and pain management, Tocher et al. (2012) described post-operative pain as an ongoing issue that patients link to quality of care. Poor pain management can

lead to increased morbidity, post-operative complications, delay in discharge, an increased use of healthcare resources, reduced quality of life, and poorer global recovery (Tocher et al., 2012). Limitations of this study pointed out by Tocher et al. (2012) included patient reporting and the potential for inaccuracies depending on time since discharge as well as the potential for patients to incorrectly answer questions regarding whether or not they had had a surgical procedure. While finding treatment of pain to be poor, Tocher et al. (2012) found that 26% of patients reported having pain all or most of the time and concluded that pain is a continuing problem for patients while patients report moderate satisfaction. Tocher et al. (2012) suggested effective pain management as humane patient care that reduces complications, facilitates earlier discharge, and the patient's sense of well-being improves.

Pain Management

Gropelli and Sharer (2013) studied a group of nurses, nine RNs and seven LPNs at a large skilled nursing facility in northeastern US using a Content Analysis approach in effort to identify nursing attitudes and the effects on pain management in the elderly. Gropelli and Sharer (2013) suggested that inadequate pain management is related to nursing attitudes and beliefs and that nurses underestimate pain or believe pain is an expected outcome. Gropelli and Sharer (2013) found that perceptions did impact pain management and concluded that nurse's beliefs and attitudes, as well as a lack of education, are barriers to effectively managing pain and the area of acute pain showing a greater knowledge deficit. Limitations were identified as a small sample size obtained from only one facility. Education and communication are greatly needed to improve pain

management as nurse's personal perceptions or bias impact the care in which they provide (Gropelli & Sharer, 2013).

Another study performed by Duzel, Aytac, and Oztunc (2013) assessed the correlation between pain assessments of nurses and patients to establish whether or not nurses can assess a patient's pain in the same way a patient would report their pain. This was a descriptive and comparative study conducted at the clinics of Cukurova University Balcali hospital with a sample size of 47 nurses and 94 patients utilizing a questionnaire for each group (Duzel et al., 2013). Statistical Package for the Social Sciences (SPSS), chi-square, t-test, and Kruskal-Wallis tests were used to analyze the data and found that nurses and patients report pain similarly (Duzel et al., 2013). The research found that there was a correlation between nurse and patient pain scores and the results were encouraging, however the mentioned limitations were the assessment of one facility and the small sample size and the lack of similar research to compare and base assessments (Duzel et al., 2013).

Schreiber (2014) also reported research findings based on education and assessment for pain management in an effort to examine the impact of educating nurses on pain management that was designed to improve pain management in the acute care setting. This research was conducted by a quasi-experimental pre- and post-intervention design and included 341 Intensive Care Unit (ICU) nurses who completed the Brockopp-Warden Pain Knowledge Assessment/Bias Questionnaire (Schreiber, 2014). Schreiber (2014) found that though there was improved documentation of reported pain after the education was provided; there were no significant differences in knowledge regarding pain management or nurse's bias. Limitations were identified as a small sample size, one

collection site, and minimal demographic data (Schreiber, 2014). Although results were not statistically significant, Schreiber (2014) concluded that a knowledge deficit remains in areas of individualized treatment, bias, and judgment continue as well as inappropriate assessment of pain.

Kol, Alpar and Erdogan (2014) conducted a study to determine the effects of pre-operative pain management education and the administration of analgesia prior to onset of pain for those undergoing a thoracotomy. The sample size of 70 patients (35 control group and 35 study group) included men and women, ages 25-65 years old. The research was conducted in the Thoracic Surgery Unit of Akdeniz University Hospital in Turkey using the Verbal Category Scale and the Behavioral Pain Assessment Scale. The sample group (70 patients) received the same surgery and anesthesia. The control group only received medication when requested by the patient, while the study group received medications prior to the patient reporting an instance of pain. This study found that there was a statistically significant reduction in pain for the first 48 hours for those who received pain medication prior to the onset of pain as well as reduced the amount of analgesics used in the first 48 hours post-operatively. Kol et al., (2014)

Mancini and Felicetti (2010) developed a process for opioid-tolerant patients in a 403 bed, inpatient community hospital in Boise, Idaho where they identified these patients prior to surgery. The protocol initiated by Mancini and Felicetti (2010) allowed these patients to continue their oral pain medications right up to surgery, created an identifier in the medical record that alerted the care team of tolerance resulting in improved prescribing and dosing for tolerant patients and a PCA protocol to mimic the patient's usual "home dose" of opioids to control post-operative pain. Preparing for post-

operative pain before surgery is beneficial and improves the plan of care after surgery (Mancini & Felicetti, 2010). Though this procedure was not a formal research article, information regarding pre-procedural planning and an individualized plan of care were evident, though the small sample size and lack of data collection method limit the ability to assess significance.

Pain Management and Patient Satisfaction

In a study conducted by Brown, Constance, Bedard, and Purden (2013) pain levels, activity levels, beliefs, and expectations were examined to better understand how to care for these patients and the care they need by identifying pain, thoughts, and beliefs regarding pain and how pain interferes with recovery. This research utilized the modified American Pain Society Patient Outcome Questionnaire, a descriptive survey design, for convenience sample of 50 adult inpatients that had undergone colorectal surgery for cancer on post-op day two (Brown et al., 2013). The research was conducted at a large teaching hospital in Quebec, Canada. Brown et al. (2013) found that pain impacted general activity, that the sample group expected pain after surgery and believed that pain medications were easily addictive and that pain medications should not be used unless pain is severe. Furthermore, this study found that patients were satisfied with the management of their pain, even when pain scores were high, though there was a decrease in satisfaction for those who experienced higher levels of pain (Brown et al., 2013). This study concluded that expectations of pain did not impact the relationship between satisfaction and high levels of pain (Brown et al., 2013). The limitations of this study included a small sample size, the lack of psychometrics in data collection and that this was the first time expectation regarding pain had been assessed in a study (Brown et al.,

2013). Overall, patient's beliefs regarding pain and pain management may impact a patient's willingness to report pain (Brown et al., 2013).

Bozimowski (2012) conducted research to assess patient perception of pain management as compared to the nurse perception of a patient's pain and the level of patient satisfaction in correlation with the medication therapy and teaching of pain management. This study was conducted at a community hospital in Michigan with a convenience sample size of 50 patients with an evaluative study method of current practice with no intervention using Visual Analog Scale (VAS) and 5-point Likert Scale (Bozimowski, 2012). Data was analyzed using SPSS and included t-test and Pearson correlation (Bozimowski, 2012). Bozimowski (2012) found that ratings of levels of satisfaction by nurses were similar to the patient's reported rating with a high correlation. One significant correlation was related to the type of medication that was prescribed, and noted that patients with IV medication interventions had a higher last reported pain and lower satisfaction mean than patients receiving other medications for pain control (Bozimowski, 2012). Additionally, this study was in agreement with previous studies that reported that the more education and information a patient is provided the higher the level of satisfaction (Bozimowski, 2012). Limitations reported were small sample size, lack of randomization, and the small size of the facility where the research was conducted (Bozimowski, 2012).

Summary

Review of current literature provided supporting evidence that effective pain management reduces adverse patient outcomes, improves healing and sense of wellbeing, and reduces length of stay. Additionally, there is evidence that suggested that nursing bias and lack of knowledge in regards to pain management continue to be a barrier to effective pain management. While there is no research specific to link early oral pain medications and length of stay for outpatients, evidence does support that effective pain management continues to be suboptimal. Furthermore, literature provided evidence in multimodal practices for management of pain as well as theories and practice for preventive pain by medicating pre-procedurally. Pain is widely recognized as an ongoing problem and that previous effort by hospitals and the governing agencies have not yielded adequate results. Individualized care and preventative medicine are at the forefront of healthcare. This thesis will expand on knowledge already available and provide evidence for practice in pain management.

CHAPTER III

Methodology

The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication is administered in Phase I and when oral pain medication is administered in Phase II. The hypothesis was that treatment with oral pain medications in Phase I would improve management of pain more rapidly, thus resulting in a reduction in reported pain, the amount of IV analgesics administered, and a shorter length of stay than those who do not receive oral pain medications until Phase II.

Implementation

The quantitative research for this thesis was conducted by retrospective chart review of patients undergoing outpatient surgery for a laparoscopic cholecystectomy procedure. Data collection was documented on a researcher-developed form (see Appendix A).

Setting

This research was conducted at a Level II trauma center housing 795 beds that serves patients who vary in age and socio-economic status. Over 21,000 outpatient surgeries are performed each year. This health system serves 14 counties and is the regional referral center for the tertiary and quaternary care in the western region of the state. There were three locations where patients in this study had surgeries performed: two "on-campus" operating room and recovery locations and one "off-site" ambulatory surgery center.

Sample

The convenience sample of 128 patients used for this study was obtained from Health Information Management based on identifying characteristics. A power analysis (Cohen, 1992) for a medium effect with an $\alpha \leq 0.05$ at a Power of 0.80 estimated a required sample size of 64 patients per group. The sample included adult males and females, ages 18-50, who had undergone laparoscopic cholecystectomy outpatient procedure and were discharged on the day of surgery.

Exclusion criteria included any delay in discharge not related to pain, a history of chronic pain, and history of dementia or confusion. Examples of exclusion items included but were not limited to: nausea, vomiting, delay in ride home, awaiting other medical interventions like X-rays, labs, etc. or consults by physician or discharge planners.

Design

This retrospective chart review study was designed to assess the current practices regarding administration of oral pain medication in the post-operative recovery units. The retrospective chart review was conducted and guided by the researcher-developed form to collect data. Thorough chart reviews to collect accurate data were necessary.

Protection of Human Subjects

There were no ethical considerations, as the retrospective chart review did not alter patient care in any instance. There were no risks or benefits associated with this research. Sample group identifiers were only in form of medical record numbers and there were no identifying characteristics included in the research. Medical Record numbers were protected by assignment of participant codes for each patient. Only the participant code was listed on the data collection tool.

Instruments

Data collection was documented on a researcher-developed tool that asks for the following data (see Appendix A):

- Pre-procedural pain level (using 0-10 scale with 0 indicating no pain and 10 indicating worst possible pain as described by the patient)
- Amount of IV pain medications given in Phase I and Phase II
- Amount of oral pain medications given in Phase I and Phase II
- Pain level (0-10) on arrival to Phase I and Phase II and at discharge
- Admit to Phase I and discharge home time to measure duration of stay
- Age and sex of patient
- Location code and participant id

Data Collection

Data was collected from patient medical records through retrospective chart review. The researcher collected data using the researcher-developed form.

Data Analysis

Patients who received oral medication in Phase I were compared to patients who received oral medication in Phase II on the following demographic and response variables: age, gender, pre-procedure pain, pain at the end of Phase I, pain at the end of Phase II, pain at discharge, total morphine equivalent injections (almost all intravenous medication was administered in Phase I), oral medication at Phase II, and duration of stay. The morphine equivalent was calculated by using www.globalrph.com morphine equivalent calculator. The relationships between receiving oral medication in Phase I and categorical variables (gender, location, and oral medication at Phase II) were assessed

using a Pearson Chi-Square test. Because boxplots of other variables indicated that outliers were present for some of the numerical variables, the relationships between oral medication in Phase I and numerical variables (age, pre-pain, pain at the end of Phase I, pain at the end of Phase II, pain at discharge, total morphine equivalent, and duration of stay) were assessed using Wilcoxon rank-sum test. To jointly assess the effects of Phase I oral medication and total IV medications on pain at discharge and duration, two multiple regression analyses were conducted.

For the regression of pain at discharge on Phase I oral medication and total IV medications the estimated regression equation was mean pain at discharge = $4.09 - 1.72 * \text{Phase I oral medication} + 0.0500 * \text{total IV medications}$, where Phase I oral medication is 1 if Phase I oral medications were given and 0 otherwise. For the regression of natural log of duration on Phase I oral medication and total IV medications the estimated regression equation was mean log duration = $0.924 - 0.264 * \text{Phase I oral medication} + 0.0125 * \text{total IV medications}$, where Phase I oral medication is 1 if Phase II oral medications were given and 0 otherwise. Because the residuals from the analysis on duration exhibited positive skewness the logarithm of duration was used as the response variable. After implementing that transformation the residuals from both analyses appeared to meet the standard regression assumptions. Analyses were also conducted including pain at Phase I as an additional variable but because it did not come close to being significant and results for the Phase I oral medication and total IV medications were changed very little by including pain at Phase I, only the analysis excluding pain at Phase I were reported here.

Summary

Pain management has been identified as an ongoing area of struggle for nurses and patients. Effective pain management though optimal is rarely achieved. Pain that is poorly managed can affect many functions of the human body. The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication was administered in Phase I and when oral pain medication was administered in Phase II. This research was conducted through retrospective chart reviews for patients who had laparoscopic cholecystectomy procedures as an outpatient and were discharged on the day of surgery using current practices of nursing.

CHAPTER IV

Results

The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication was administered in Phase I and when oral pain medication was administered in Phase II.

Sample Characteristics

The sample used for this research was a convenience sample consisting of 128 total patients, 64 in each group. Both groups contained 14 males and 50 females, and the mean age for both groups was 34.9 years old (see Table 1).

Table 1.

Sample Characteristics

	Group 1		Group 2	
	n	Percent	n	Percent
Gender				
Male	14	50.0	14	50.0
Female	50	50.0	50	50.0
Age	Mean Age 34.9		Mean Age 34.9	

Major Findings

These study findings included a reduction in length of stay (duration) and a reduced level of reported pain for those patients who received oral pain medications in Phase I. Even though the amount of IV medication administered to patients receiving oral pain meds in Phase I was significantly higher, no significant effects of the IV pain meds on pain level at discharge and on duration of stay were found (see Figures 1, 2 & 3).

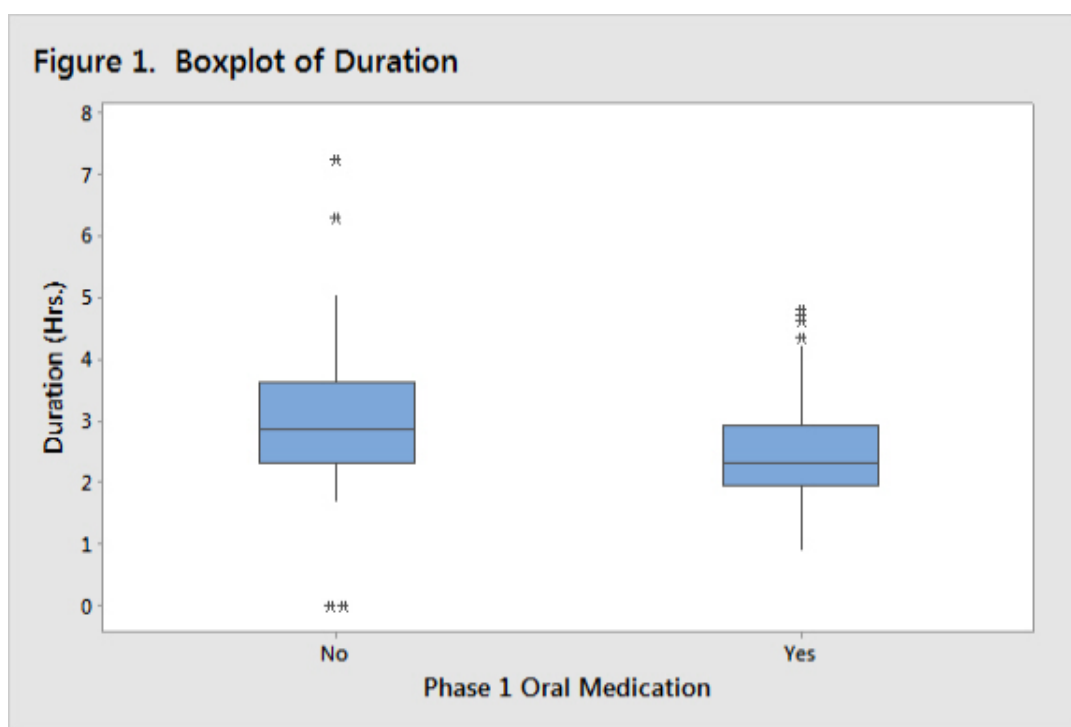


Figure 1. Boxplot of Duration

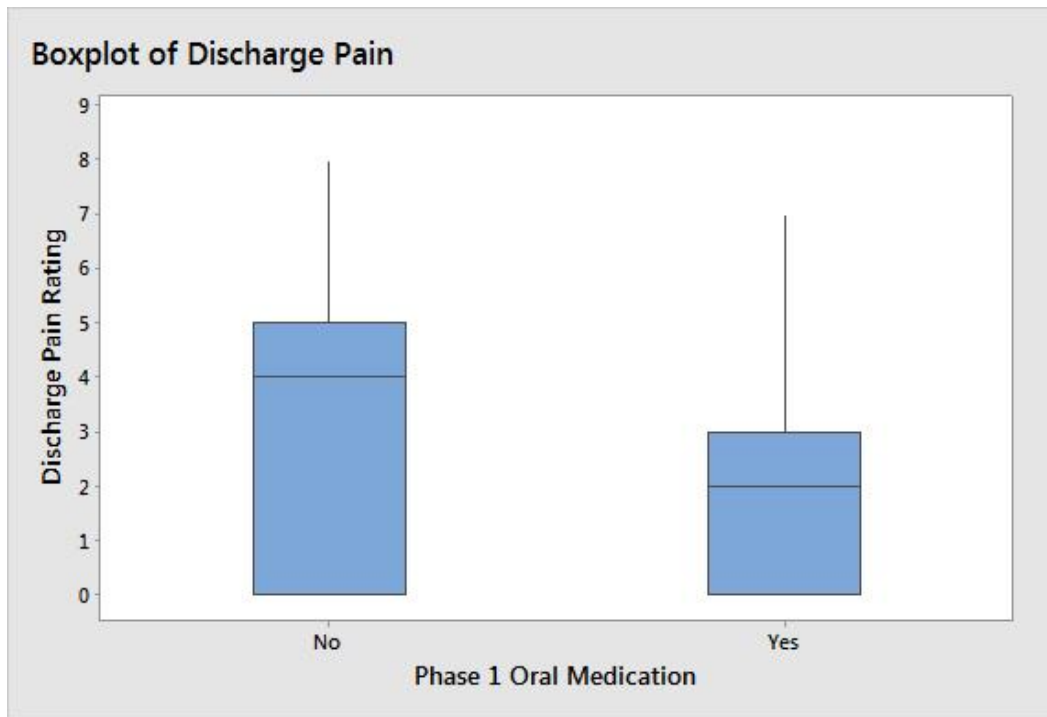


Figure 2. Boxplot of Discharge Pain

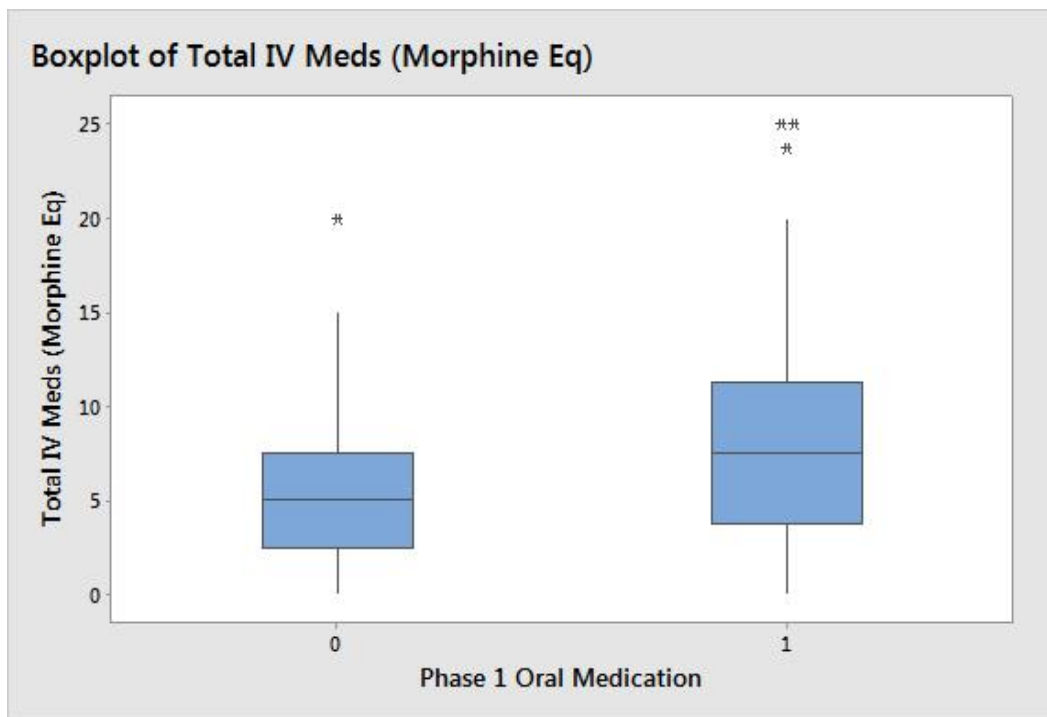


Figure 3. Boxplot of Total IV Meds (Morphine Eq)

Results

Comparisons between Group 1 (receiving oral pain meds in Phase I) and Group 2 (receiving oral pain meds in Phase II) revealed no significant findings in pre-procedure pain levels and post-Phase I pain levels. Significant findings included lower post-Phase II pain levels, higher amounts of IV pain medications administered and shorter durations of stay in Group 1 patients. (See Table 2)

Table 2.

Comparison between patients who received oral medication in Phase I (Group 1, n=64) and patients who received oral medication in Phase II (Group 2, n=64) on numeric variables.

Variable	Group 1	Group 2	p-value
	Mean (St. Dev)	Mean (St. Dev.)	
Pre-procedure Pain	1.39 (2.30)	1.27 (2.28)	0.680
Post-Phase I Pain	5.02 (3.29)	3.89 (3.60)	0.070
Post-Phase II Pain	4.03 (1.71)	5.22 (2.35)	0.001
Discharge Pain	2.74 (1.68)	4.35 (1.66)	<0.001
Intravenous Med.	8.26 (6.49)	5.39 (4.22)	0.016
Duration (Hours)	2.52 (0.89)	3.13 (1.04)	<0.001

Due to the findings that those receiving oral pain medications in Phase I had significantly higher amounts of IV medication, the multiple regression was done to determine the relationship between the amounts of IV medication and pain level and duration of stay. Phase I oral medication administration was found to have a significant negative effect ($p < 0.0001$) and total amount of IV medications administered did not

have a significant effect ($p = 0.134$) on mean pain at discharge. Phase I oral medication administration had a significant negative effect ($p < 0.0001$) and total amount of IV medications had a significant positive effect ($p = 0.0183$) on mean duration of stay, each adjusting for the effects of the other variable. These findings revealed that administration of oral pain medication in Phase I are significantly related to lower mean pain levels at discharge and shorter durations of stay. The amount of IV pain medication administered did not have a significant effect on mean pain at discharge while an increase of 10 units of pain medication was significantly related to long durations of stay.

Summary

By comparing Group 1, those who received oral pain medication in Phase I, and Group 2, those who received oral pain medication in Phase II, differences were noted in duration (length of stay), pain at discharge, and IV medication administered. The one area of the study that did not bring expected results was amount of IV medications administered. The amount of IV pain medications used was higher in Group 1 than that of Group 2. There was a statistical significance to the differences in pain, duration, and amount of IV medications administered. The regression studies provided information that supported the theory that oral pain medication given in Phase I do significantly reduce discharge pain and length of stay. The regression log also provided information that the amount of IV pain medication was not a factor in discharge pain and was associated with a longer length of stay. The results of analysis provided information that supported that oral pain medication given in Phase I resulted in shorter length of stay and lower reported pain at discharge.

CHAPTER V

Discussion

The results of this study provided information about the difference in the effects on the outpatient surgical patients' level of pain, amount of IV pain medication administered, and length of stay when oral pain medication is administered in Phase I and when oral pain medication was administered in Phase II.

Mitchell (2004) supported that ineffective pain management in day surgery patients can occur due to patient's not reporting pain accurately, under-dosing of medications, nursing bias, delay in administration of medication, and lack of assessment for pain. This study can be instrumental in providing data related to timing of medication administration and the effects on length of stay, and pain.

Nworah (2012) noted that many organizations have created initiatives to better document and assess pain, yet the treatment for pain continues to be suboptimal. Effective pain management results in earlier ambulation, reduced cost, reduced length of stay, and improved patient experience (Nworah, 2012).

Implication of Findings

There were two significant findings in this research related to oral pain medications being given in Phase I, as opposed to Phase II. These findings suggested that patients who receive oral pain medications in Phase I have a shorter length of stay (duration), and lower reported pain at discharge. Though discharge pain was significantly less in those who received Phase I oral pain medications, these patients also received higher doses of IV medications. This was an unexpected finding and could be related to location and practice in that location. Additionally, these higher doses of IV pain

medications could have had an effect on the reported pain. Duration in hours for those who received oral pain medication in Phase I was significantly different than those who received oral pain medications in Phase II (2.52 hours compared to 3.13 hours). This reduction in duration, or length of stay, could likely be a result of more effective pain management. Argoff (2013) recognized that pain management continues to be problematic and can result in poor outcomes including delayed rehabilitation, persistent post-operative pain, and increased length of stay and/or readmissions.

Application to Theoretical Framework

Dorothea Orem's Self-Care Deficit Nursing Theory suggested that people have the desire to provide self-care, yet at times are unable to provide self-care and require assistance (Alligood & Tomey, 2010). This theory relates to this study in two ways – the need and inability of providing self-care, and the nurse's responsibility to aid the patient in returning to a level of self-care. While under the effects of medications and medical intervention, there is a self-care deficit. The nurses care for the patients, providing them with what they need, and are unable to do for themselves. In addition, these nurses also are working to return patients to a level of self-care in order to be discharged (outpatient surgery). Nurses must also educate the patients on the medical needs related to their surgery and medications. Considering that patients having surgery will likely have pain and need for pain management, this theory supported the practices of the peri-anesthesia nurse.

Limitations

This study provided strong data for providing early oral pain medications in Phase I and the effects on length of stay and discharge pain; however it is not without

limitations. Documentation of reported pain at discharge, in some instances, was missing and this area on the collection sheet was left blank. Pain was documented on arrival to Phase I consistently, yet documentation of Phase II arrival and discharge pain scores was less consistent. Ideally, there would have been 100% documentation for all data points collected.

The patient list for this research included patients from three different areas of the organization, one outpatient surgery facility, and two in-patient surgery facilities. These three areas could have differing practices for approaching discharge based on the culture of the units or comfort level of the nurses. The discharge criteria are the same for all areas, yet it is possible that an outpatient facility may be more aggressive with pain control, discharges, etc. where an in-patient facility may be less aggressive.

Notwithstanding, all three areas have the same discharge criteria that must be met prior to a patient's discharge set forth by governing bodies of peri-anesthesia. This was not a part of the research project and could possibly yield more information if studied further. Outpatient nurses may be more comfortable with discharging patients more rapidly than in-patient nurses.

Implications for Nursing

The Joint Commission instituted pain assessment as a 5th vital sign in effort to mandate effective pain assessment and management, and Nworah (2012) suggested that while documentation may have improved, the management of pain is still inadequate. Pain control is a responsibility of healthcare providers and barriers should be identified and removed (Nworah, 2012). This study on oral pain medications demonstrates that there are two differing practices among nurses and lack of knowledge may be the

contributing factor and identifies opportunity for improved patient experience and outcomes. McNamara (2012) recognized poor pain management as an issue and implemented an educational program for nurses to study the effects of pain management education on nurse's practice and assessed the attitudes of nurses regarding assessment and management of pain. As a result McNamara (2012) found that with pain management education nurse's knowledge and attitude about pain and how to treat pain were improved, were statistically significant, and concluded that continuing education can improve nurse's knowledge of pain. Additionally, McNamara (2012) concluded that there is an ongoing need to prioritize pain management and continuously educate nurses on effective pain management.

Effective pain management can also have an effect on outcomes for patients. Argoff (2013) identified the risks of poor pain management (under or over treatment) which include: cardiac alterations, increased risk of heart attack, respiratory complications, thromboembolic complications, alterations in immune system, delayed rehabilitation, and poor impacts on quality of life. Pain management is not just about managing discomfort, it impacts health and wellness and quality of life. Argoff (2013) stated that effective pain management can reduce the risk of poor outcomes. Managed pain can allow patients to participate in rehabilitation, activities of daily living, and reduce their risk of poor outcomes. A patient's experience with pain (even their perception of pain) can affect healing and impact the emotional state of the patient (Tocher et al., 2012). We as nurses must assist our patients to a healthy emotional state and promote healing. One way we can influence this aspect of patient care is through better pain management.

Recommendations

Future studies of this nature might benefit from assessing the beliefs and practices of the nurses to identify any differences between in-patient and outpatient nurses' beliefs and or training in regards to pain management and/or discharging patients. Identifying this may alter the framework of the study and add insight as to the unit culture and the reason for specific nurse practices. Additionally, interviewing nurses and identifying their beliefs surrounding their practice would allow researchers to understand the starting point for any educational needs.

Conclusion

Pain and pain management can have an effect on outcomes for patients (Argoff, 2013). This study has provided further information that pain management can impact the outpatient surgical patient's length of stay and reported pain. By providing oral pain medication in Phase I (earlier in the recovery), patients reported pain is significantly less, and duration (length of stay) is significantly less. These outcomes are beneficial to both patients and facilities, as length of stay can impact nursing hours, supplies, and other resources, as well as the patients' surgical experience. The knowledge of this impact can provide evidence-based data for post-procedure care, and knowledge is power.

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Appendix A

Research Data Collection Tool - The Effects of Oral Pain Medication being administered in Phase I as compared to Oral Pain medications administered in Phase II

1. PACU admission time	
2. Pre-procedure pain level 0-10 (0 being none and 10 being the worst possible pain)	
3. Pain level, 0-10, immediately post-procedure (pain level and time)	
4. Amount of IV narcotics given in Phase I	
Fentanyl	
Morphine	
Dilaudid	
Morphine Equivalent	
5. Oral Pain medications given in Phase I (yes or no)	
6. Pain level, 0-10 on arrival to Phase II	
7. Pain level, 0-10, at discharge (pain level and time)	
8. IV medications given in Phase II:	
Fentanyl	
Morphine	
Dilaudid	
Morphine Equivalent	
9. Oral Pain medications given in Phase II (yes or no)	
10. Age	
11. Sex (Male/Female)	
12. Discharge Time	
13. Participant Code:	
14. Location Code:	